1. Black Body radiation problem:

Ratio of Power = $\left(\frac{4400}{6400}\right)^4 = 0.22$, or 22%	comparison of wavelength peaks: $\lambda = \frac{a}{T} = \left\{\begin{array}{l} \frac{2.898\times10^{-3}}{4400} = 6586\ \mathring{A} \\ \frac{2.898\times10^{-3}}{6400} = 4528\ \mathring{A} \end{array}\right\}$

2. We see the solar corona (white lite from the solar surface, reflected by electrons in the hot solar atmosphere)

a) the glare from the photosphere goes away, so the relatively faint light reflected by the corona becomes visible,

b) the background from our own atmosphere (sky-shine) decreases

3. Pressure = force/area = weight of the atmosphere/area = mass * gravity/area

take:

$g_{earth} = 10$, $g_{sun} = 300\ m/s^2$ (30 times earth).

$Mass_{solar} = 2.1\times10^{19}$, $Mass_{earth} = 5.29\times10^{18}$,

$R_\odot = 6.96 \times 10^8$ m; solar surface area = $4\pi R^2_\odot$,

$R_\oplus = 6.37\times10^6$ m; earth surface area = $4\pi R^2_\oplus$,

$$\text{Earth: pressure} = \frac{10\ \frac{m}{s^2}\bullet 5.3\times10^{18}\ kg}{4\pi\left(6.4\times10^6\ m\right)^2} = \frac{5.3\times10^{19}}{5.2\times10^{14}} = 1.0\times10^5\ \frac{\text{Newtons}}{m^2}$$

$$\text{Sun: pressure} = \frac{300\ \frac{m}{s^2}\bullet 2.1\times10^{19}\ kg}{4\pi\left(7\times10^8\ m\right)^2} = \frac{6.3\times10^{21}}{6.2\times10^{18}} = 1.0\times10^3\ \frac{\text{Newtons}}{m^2}$$

The ratio is 1:100.

4. Change in energy density:

$$\text{Energy Density} = \frac{B^2}{2\mu_\circ} = \frac{0.3^2}{2\bullet1.26\times10^{-6}} = 35.8\times10^3\ \ {}^{\text{Joules}}\!/_{m^3}$$

$$\text{Energy} = \text{Energy Density}\bullet\text{volume} = 35.8\times10^3\bullet\left(10^7\right)^3 = 3.6\times10^{25}\ \text{Joules}$$

If a portion of this energy is converted into heat (in the plasma), the decrease of 1.0×10^{25} is a percentage decrease of $100\frac{1}{3.6} =$ 28%

5. It looks like 1.5 million degrees comes the closest